5:La Barre E-5 (1937-1938) 1946
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edge of the pontoons. The whole makes a sea-sled type of hull, which will not easily overturn even in the fierce storms of Lake Titicaca.

The balsa is poled along with a stubby trident, the wood for which comes from the yungas east of the Cordillera Real. In the open lake, a trapezoidal reed sail is rigged on two poles stuck deeply into the pontoons and forming an inverted V. The balsa is unable to tack in the wind, however, for it lacks a centerboard. Balsas are dragged onto the land from time to time lest they become waterlogged and rot. Though they may be bought for 10 to 16 Bolivian dollars (bolivianos), they represent much labor.

MANUFACTURES

Uru material culture is simple. Owing to the lack of trees, the giant totora reed (*Scirpus totora*) is of extraordinary importance, providing material for fuel-wire, roof mats (pl. 117, *top, left*), floor and sitting mats, rafters, doors, balsas, sails, and even food for animals and people. Metallurgy is unknown. Pottery making has been abandoned in recent times.

Basketry.—Crudely coiled baskets and twined totora reed baskets are made.

Textiles.—The *Uru* make twine bird nets, mats of various types, sails, grass rope, and simple baskets (both coiled and twined). Women spin llama wool as incessantly as the men make grass rope, using a wooden spindle. They weave the yarn into cloth on a simple bar loom staked taut on the ground (pl. 116, *top*), rolling up the finished cloth on the end bar. When the end of the warp is approached, they weave from the other end, and finally fill in the last intermediate strip with a needle. Knitting is not pre-Columbian here, but *Uru* women are very skilful in knitting *Aymara*-type caps (*gorros*), often with amazingly intricate animal figures and other designs. Men's slingshots are very beautifully braided of wool with variegated diamond designs like the markings on snakes. The *Uru* also make thongs of twisted rawhide still retaining the fur, and heavy braided woolen ropes for hobbling beasts on burden animals.

An extremely interesting textile, apparently unique to the region southeast of Lake Titicaca, is a kind of feather cloth described by David Forbes (1870). The down of lake birds was spun into thread, and then knit into caps and children's socks and gloves. Only a few specimens of these exist in museums.

Weapons.—To make bolas, the *Uru* buy cotton thread from traders and wind this tightly around a cord V to make a durable hide-fitting weapon. A straw-cord bola particle, similar to that of Patagonia, is also used.

Metals.—The *Uru* know no metallurgy, although the *Aymara* of Isla de Mankora, scarcely a day's journey away, are famous for their

9:La Barre E-4,5 (1936) 1941
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knives on the ends of poles, then stacked in shocks like corn, after they have been dried spread out in the sun. Nearly all able-bodied Uru males have quantities of these materials in various stages toward the manufacture of the complete boats. In their houses, even, in spare moments, men are continually braiding the grass into tough ropes to bind the boats together.

Though shaped like a boat, the *balsa* is of course actually a raft. A handful of reeds is bound together and repeatedly thickened with more reeds as the middle of the cigar-shaped element is reached, then tapered off again into a point. The only tool used in the manufacture of this is a wooden hook (*kayke*) with a handle at an acute angle to it, used to tighten the lashing of grass rope. A more tubular and thinner sheaf of reeds forms the keel of the *balsa*, and two of the fat cigar-shaped bundles are separately lashed to it, forming a sort of one-sided type of hull, which cannot be overturned in a storm; the thinner ends of these cigar-shaped bundles are slightly raised fore and aft of the boat. To form gunwales, a still thinner and tubular sheaf of reeds is lashed (during its own round-and-round binding with braided grass rope) through the original lashing of the hull-elements. One of these gunwales (*pisela*) is placed on each side of the top of the hull-elements to prevent splashing of water onto the occupants of the boat as it is poled along. The Uru *balsa* thus differs from the Aymára[36] type in that its two large basic elements are lashed to a central "keel" and not to each other (though the bulwark lacings are similarly looped through the lacings of the two hull-elements); it has therefore five instead of four elements. The Uru also rig their *balsa*-mat sails with a slight difference from the Aymára. Sails, however, can only be used on the Lake and on the open river "before the wind" since the boat has no centre-board and cannot tack. In the narrow swamp-ways a punt pole or gaff (*tokol*) with a stubby trident at its end is used to push the boat along. The wood for these comes from the *yungas* of the Cordillera Real's eastern, tropical slopes. (See Posnansky, *Fig.* 83.) A complete *balsa* cost in 1927 from ten to sixteen *bolivianos*, then worth about $4.

Of Uru textiles we have already seen[37] twined single-element *totora* *chulo*-sack, *twined*[37] *many-element* maximum-mats of reed, fish- and bird-nets (which they themselves make of cord obtained in Guaqui from La Paz), and single-element twined *reed* mats of *totora*. Métraux has an excellent description (page 86) of the preparation by soaking, pounding, and rolling of the wiry grasses of the region (*Stipa ichu*, *Festuca orthophylla*, and *F. dis-*

[36] Lawrence B. Parodi, *Los balsas usadas por los Aymaras en el lago Titicaca* (Physis, Revista de la Sociedad argentina de ciencias naturales, Vol. 11, Buenos Aires, 1933), pp. 143-149. Métraux' description (*Ibid.* p. 86) is of the Aymára type.